

**REMARKS**

Claims 1 and 3-7 are pending in this application. Claim 1 is independent claims, no claims are amended and claim 2 has been canceled. In light of the below remarks, favorable reconsideration and allowance of the present application are respectfully requested.

**Entry of Amendment After Final Rejection**

Entry of the Amendment is requested under 37 C.F.R. § 1.116 because the Amendment: a) places the application in condition for allowance for the reasons discussed herein; b) does not present any additional claims without canceling the corresponding number of final rejected claims; and/or c) places the application in better form for an appeal, if an appeal is necessary. Entry of the Amendment is thus respectfully requested.

**Rejections Under 35 U.S.C. § 103 – HANAOKA in view of UCHIDA**

Claims 1 and 3-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0067950 (“*Hanaoka*”) in view of U.S. Patent No. 6,301,278 (“*Uchida*”). This rejection is respectfully traversed.

*Hanaoka* allegedly teaches a nitride semiconductor device including a chip mount portion 101, a submount 102, and a semiconductor laser chip 103. The nitride semiconductor laser chip 103 is fixed, with solder 107, on the surface of a submount 102 that is fixed, with solder 106, on the surface of a chip mount portion 101 formed so as to protrude from a stem 100. (*Hanaoka*, paragraph [0039] and FIGS. 2 & 3). Submount 102 is allegedly “made of a material having a thermal expansion coefficient higher than that of a nitride semiconductor substrate.” (*Hanoaka*, Abstract, [0011] and [0042], [0061] and [0075]).

*Hanoaka* allegedly further teaches that the submount 102 may be made of any material that has a thermal expansion coefficient higher than that of GaN, for example, from Cu, GaAs, CuW10, CuW15, CuW20, Al<sub>2</sub>O<sub>3</sub>, BeO, Al-SiC, Fe, Au, Ag, or Al. (*Hanaoka*, [0049]).

In the previous Office Action (mail date 8/27/2007), the Examiner admits that “*Hanaoka* is silent as to a submount made of AlN.” (8/27/2007 Office Action, page 4). However, in the Final Office Action (mail date 3/19/2008), the Examiner alleges that, because *Hanoaka* discloses that the submount 102 may be made of Al, the combination of *Hanoaka* and *Uchida* teaches the limitations of claim 1. (Final Office Action, page 2).

Applicants respectfully disagree and submit that, because *Hanoaka* discloses that submount 102 may be made of Al, *Hanoaka* still fails to teach or suggest a “submount is made of AlN” as recited by claim 1, and further submit that nothing in *Uchida* cures this deficiency.

*Uchida* allegedly teaches a semiconductor laser device including a semiconductor laser element that is said to be placed inside a package on an electrically conductive submount such that one of the electrodes with one conduction type sandwiching its p-n junction is electrically connected to it. The submount is allegedly placed on a metallic heat sink, separated therefrom by a layer of an electrical insulator having a larger thermal conductivity than the submount. (*Uchida*, Abstract). *Uchida* allegedly further teaches a semiconductor laser device “having an electrical insulator with a high thermal conductivity disposed between and in contact with a metallic heat sink and an electrically conductive, relatively inexpensive submount such as comprising Si.” (*Uchida* col. 3, lines 20-24).

Applicants submit that the use by *Uchida* of the thermally conductive AlN submount 25’ does not teach or suggest the relationship described in claim 1, of a “submount being made of a material having a thermal conductivity higher than that of a material used to form said electrically conductive material.”

Assuming *arguendo* that *Uchida* does teach the relationship described above (which Applicants do not admit), Applicants further submit that *Uchida* teaches away from using a submount composed of AlN, despite its higher thermal conductivity relative to a submount composed of Si. *Uchida* teaches the use of a “relatively inexpensive submount usch as comprising Si.” (*Uchida*, col. 3, lines 23-24). According to *Uchida*, “if a laser element is unadjustably defective, the submount to which it is mounted is also discarded. Since silicon submounts are relatively inexpensive, the procedure described above is not impractical, not incurring a serious economical loss. Since AlN submounts are significantly more expensive (say, by a factor of several tens) than silicon submounts, the loss due to discarded AlN submounts can significantly affect the production cost of the laser devices.” (*Uchida*, col. 2, lines 57-65). Thus, by revealing the “practical problem” of the “significantly more expensive” AlN submounts relative to Si submounts, *Uchida* teaches one of ordinary skill in the art away from using AlN submounts in combination with *Hanoaka*.

For at least these reasons, Applicants submit that the rejection of claim 1 should be withdrawn, and further that the rejections of claims 3-7 should also be withdrawn, at least by virtue of their dependency upon claim 1.

**CONCLUSION**

In view of the above remarks and amendments, Applicants respectfully submit that each of the rejections has been addressed and overcome, placing the present application in condition for allowance. A notice to that effect is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to contact the undersigned.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Donald J. Daley, Reg. No. 34,313 at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,  
HARNESS, DICKEY, & PIERCE, P.L.C.

By



Donald J. Daley, Reg. No. 34,313

P.O. Box 8910  
Reston, Virginia 20195  
(703) 668-8000

DJD/PXL:eab